-	OF	***************************************	.,			COMPLE F KNOWN
X	11, - 40%	16 (F-CLTCK & 0 200 AL)			Application Number	09/885,451
ĺ		INFORMATION			Confirmation Number	3390
-	" G Drom	STATEMENT E			Filing Date	February 20, 2001
.	MOA .	Form PTO-14			First Named Inventor	Thomas L. Ritzdorf
Ŋ	. 29	Øse several she	ets if necessary	1)	Group Art Unit	1741
Ì	2 COMPANY				Examiner Name	Unknown
l	` Sheet	2	of	6	Attorney Docket No.	29195-8170US2

					U	.s. PATENT DOCUMENTS					
~	_		I.S. Patent or Applicat	llon	-	TO THE RESIDENCE OF THE PERSON					
W		*6,:	297,154		\G	Pross et al.	10/0	2/01			
			0000	<u> </u>							******
					FOR	EIGN PATENT DOCUMENTS					·
Examiner Initial	Cit e No	For	reign Patent or Applic	ation Kind C (if kno		Name of Patentee or Applicant of Cited Document		Public Filling of C	te of ation or y Date Cited Iment	Pages, Columns, Lines, Where Relevant Figures Appear	
ML		EP	*0 751 567 A	12		Intl. Business Machines Co	огр.	01/02	2/97		1
W		EP	*0 881 672 A	2		Intl. Business Machines Co	orp.	12/02	/98		T
WC		EP	*0 982 771 A	11		Lucent Technologies, Inc.		03/01	/00	,	
WL		WO	*98/27585			Intl. Business Machines Co	rp.	06/25	/98		
	= <u>100000000</u>	-200-7	OTHER PR	IOR	AR	r-NON PATENT LITERATURE D	OCUM	ENTS			
Examiner	Cite					(in CAPITAL LETTERS), title of the article (, symposium, catalog, etc.), date, page(s), w					
Initials	No.			······		and/or country where published.					T
WL.	\	AHN, Socie	E. C. et al. "Adhesion Reliability of Cu-Cr Alloy Films to Polyimide" Materials Research y Symposium Proceedings, 1996, Vol. 427, pp. 141-145, Materials Research Society.								
		annea				between reliability and post-CMP on the connects IEEE International I					
" "N (CO)	2	Mater				n Energy of Electromigration in Composium Proceedings, 1996, Vol.					
Ħ,S	7					ectromigration In Submicron Wide 9s, 1996, Vol. 427, pp. 127-132, N					
MEI, Y. et al. "Thermal Stability and Interaction Between SIOF and Cu Film" Materials Research Society Symposium Proceedings, 1996, Vol. 427, pp. 433-439, Materials Research Society.											
RUSSELL, S. W. et al. "The Effect of Copper on the Titanium-Silicon Dioxide Reaction and the Implications for Self-Encapsulating, Self-Adhering Metallization Lines", Materials Research Society Symposium Proceedings, 1992, Vol. 260, pp. 763-768, Materials Research Society, Pittsburgh, PA.											
W						and Contact Metallization,* Ried, rt, PV 97-31, The Electrochemical					97.
EXAMINER	enterno en	<u></u>	······································			DATE CONSIDERED	00000000000000000000000000000000000000		************	***************************************	·
1,1:	Mi.	arh	Leader			9/9/2004					
*EXAMINE	₹: In	itial if refer	cace considered, wheth			ria is in conformance with MPEP 609. Draw li	ne through	citation if	not in confo	rmance and not	
Form 1449.0		nsidered. I	menuae copy of this form	1 771151 1	icai o	ommunication to application(s).					

			·	7		
			COMPLETE IF KNOWN			
KA E ACTURED THE TION DIE	ما ممایت		Application Number	09/885,451		
ANFORMATION DIS			Confirmation Number	3390		
1 0.02 10			Filing Date	February 20, 2001		
Form PTO-1449 (First Named Inventor	Thomas L. Ritzdorf		
∭ " @⊌se several sheets i	r necessary	/ }	Group Art Unit	1741		
No. of the last of			Examiner Name	Unknown		
Sheet 6	of	6	Attorney Docket No.	29195-8170US2		

		OTHER PRIOR ART-NON PATENT LITERATURE DOCUMENTS	
Examiner Initials	Cite No.	include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume issue number(s), publisher, city and/or country where published.	T
M		*Edelstein, D. et al, *Full Copper Wiring in a Sub-0.25µm CMOS ULSI Technology*, IEEE, pp. 773-776, 1997.	
N		*Ryan, J.G. et al, "Technology Challenges for Advanced Interconnects". (১০ ঠেইছ)	
<u>yo-</u>		*Lowenheim, Frederick, "Electroplating", pp. 416-425, January 1979.	
ML	····	*Patent Abstracts of Japan 04-120290, 21 April 1992.	
M	·	*Ahn, E.C., et. al., *Adhesion Reliability of Cu-Cr Alloy Films To Polyimide,* Met. Res. Soc. Symp. Proc. Vol. 427, 1996 Materials Research Society, pp. 141-145	
WL		*Alers, G.B. et al., "Trade-off between reliability and post-CMP defects during recrystallization anneal for copper damascene interconnects," IEEE International Reliability Physics Symposium, Orlando, Florida 2001, pp. 350-354	
M		*Gladkikh, A. et. al., *Activation Energy of Electromigration in Copper Thin Film Conductor Lines,* Met. Res. Soc. Symp. Proc. 1996 Materials Research Society, pp. 121-133	
WL		*Russell, S.W. et al., "The Effect of Copper on the Titanium-Silicon Dioxide Reaction and the Implications for Self-Encapsulating, Self-Adhering Metallization Lines," Materials Research Society Symposium Vol 260 — Advanced Metallization and Processing for Semiconductor Devices and Circuits — II (May 1992) pp 763-769	
M		*Mel, Yu-Jane et al., *Thermal Stability and Interaction Between Siof and Cu Film,* Met. Res. Soc. Symp. Proc. Vol 427, 1998 Materials Research Society, pp. 433-439	
		RECEIVED	
	-	DEC 0 2 2002	
		TC 1700	

	EXAMINER		DATE CONSIDERED
***********	W:)	lian Leader	9/9/2004
	*EXAMINER: Initial i	if reference considered, whether or not criteria is	in conformance with MPEP 609. Draw line through citation if not in conformance and not
ı	conside	red. Include copy of this form with next commu-	unication to application(s).

WAR 2 1 TOTAL THE STATE OF THE

PTO/SS/09a/6 (08-05)
Approved for use through 07/31/2006. CNB 0651-0031
U.S. Patern and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Sut	Substitute for form 1449A/B/PTO				Complete If Known
				Application Number	09/885,451-Conf. #3390
1	IFORMATION	I DI	SCLOSURE	Filing Date	June 20, 2001
S	TATEMENT E	3Y /	APPLICANT	First Named Inventor	Thomas L. Ritzdorf
				Art Unit	1742
(Use as many sheets as necessary)				Examiner Name	W. T. Leader
Sheet	2	of	3 .	Attorney Docket Number	291958170US2

US-5,651,823	01-01-2001	MICHAEL L PARODI		
US-5,651,865	07-29-1997	Sellers		╗
US-5,674,787	01-01-2001	BIN ZHAO		
US-5,677,244	01-01-2001	RAMNATH VENKATRAMAN		
US-5,693,563	01-01-2001	SU-PING TEONG		_
US-5,705,223				
US-5,707,466	01-01-2001	HARRY A. ATWATER		
US-5,718,813	02-17-1998	Drummond et al.		
US-5,723,028				
US-5,747,355				٦
US-5,763,953	01-01-2001	TADASHI IIJIMA		
US-5,779,799	01-01-2001	SHAWN D. DAVIS		٦
US-5,801,444				7
US-5,814,557	01-01-2001	RAMNATH VENKATRAMAN		
US-5,873,992	01-01-2001	JOHN H. GLEZEN		٦
US-5,937,142	01-01-2001	MEHRDAD M. MOSLEHI		
US-6,015,749				
US-6,037,257	01-01-2001	TONY CHIANG		
US-6,072,163				
US-6,099,712				
US-6,100,195	01-01-2001	LAP CHAN		
US-6,121,141	01-01-2001	CHRISTY MEI-CHU WOO		
US-6,123,825				
US-6,126,989				_
US-6,136,163	01-01-2001	ROBIN CHEUNG		
US-6,139,697				
US-6,184,121				
US-6,184,137	01-01-2001	PEIJUN DING		7
	US-5,651,865 US-5,674,787 US-5,677,244 US-5,693,563 US-5,705,223 US-5,707,466 US-5,718,813 US-5,723,028 US-5,723,028 US-5,747,355 US-5,763,953 US-5,763,953 US-5,763,953 US-5,801,444 US-5,814,557 US-5,801,444 US-5,814,557 US-6,873,992 US-5,937,142 US-6,015,749 US-6,015,015	US-5,651,865 07-29-1997 US-5,674,787 01-01-2001 US-5,677,244 01-01-2001 US-5,693,563 01-01-2001 US-5,705,223 01-06-1998 US-5,707,466 01-01-2001 US-5,718,813 02-17-1998 US-5,723,028 03-03-1998 US-5,743,355 01-01-2001 US-5,763,953 01-01-2001 US-5,763,953 01-01-2001 US-5,801,444 01-01-2001 US-5,801,444 01-01-2001 US-5,814,557 01-01-2001 US-5,873,992 01-01-2001 US-5,873,992 01-01-2001 US-6,015,749 01-01-2001 US-6,015,749 01-01-2001 US-6,015,749 01-01-2001 US-6,015,749 01-01-2001 US-6,015,749 01-01-2001 US-6,015,141 01-01-2001 US-6,123,825 01-01-2001 US-6,123,825 01-01-2001 US-6,138,163 01-01-2001	US-5,651,865 07-29-1997 Sellers US-5,674,787 01-01-2001 BIN ZHAO US-5,677,244 01-01-2001 RAMNATH VENKATRAMAN US-5,893,563 01-01-2001 SU-PING TEONG US-5,705,223 01-06-1998 Bunkofske US-5,707,466 01-01-2001 HARRY A ATWATER US-5,718,813 02-17-1998 Drummond et al. US-5,723,028 03-03-1998 Poris US-5,747,355 01-01-2001 TOSHIMITSU KONUMA US-5,763,953 01-01-2001 TADASHI IIJIMA US-5,763,953 01-01-2001 SHAWN D. DAVIS US-5,801,444 01-01-2001 MOHAMED O. ABOELFOTOH US-5,814,557 01-01-2001 RAMNATH VENKATRAMAN US-5,873,992 01-01-2001 JOHN H. GLEZEN US-5,937,142 01-01-2001 MEHRDAD M. MOSLEHI US-6,015,749 01-01-2001 TONY CHIANG US-6,037,257 01-01-2001 TONY CHIANG US-6,037,257 01-01-2001 TONY CHIANG US-6,037,141 01-01-2001 TONY CHIANG US-6,100,195 01-01-2001 LAP CHAN US-6,123,825 01-01-2001 LAP CHAN US-6,123,825 01-01-2001 CYPRIAN E. UZOH US-6,138,163 01-01-2001 ROBIN CHEUNG US-6,138,163 01-01-2001 ROBIN CHEUNG US-6,138,697 01-01-2001 ROBIN CHEUNG	US-5,651,865 07-29-1997 Sellers US-5,674,787 01-01-2001 BIN ZHAO US-5,677,244 01-01-2001 RAMNATH VENKATRAMAN US-5,677,244 01-01-2001 SU-PING TEONG US-5,705,223 01-06-1998 Bunkofske US-5,707,466 01-01-2001 HARRY A. ATWATER US-5,707,466 01-01-2001 HARRY A. ATWATER US-5,718,813 02-17-1998 Drummond et al. US-5,723,028 03-03-1998 Poris US-5,723,028 03-03-1998 Poris US-5,747,355 01-01-2001 TOSHIMITSU KONUMA US-5,747,355 01-01-2001 TADASHI IIJIMA US-5,779,799 01-01-2001 SHAWN D. DAVIS US-5,801,444 01-01-2001 MOHAMED O. ABOELFOTOH US-5,801,444 01-01-2001 MOHAMED O. ABOELFOTOH US-5,814,557 01-01-2001 RAMNATH VENKATRAMAN US-5,873,992 01-01-2001 JOHN H. GLEZEN US-6,937,142 01-01-2001 MEHRDAD M. MOSLEHI US-6,015,749 01-01-2001 TONY CHIANG US-6,037,257 01-01-2001 TONY CHIANG US-6,037,257 01-01-2001 TONY CHIANG US-6,037,257 01-01-2001 THOMAS L. RITZDORF US-6,123,825 01-01-2001 CHRISTY MEHCHU WOO US-6,138,63 01-01-2001 ROBIN CHEUNG US-6,138,63 01-01-2001 LAR CRBINSON US-6,138,63 01-01-2001 LEENA P. BUCHWALTER

		FOREI	GN PATENT	DOCUMENTS		
Examiner Initials*	Cite No.	Foreign Patient Document Country Code ³ (Richam)	Publication Cate MM-DD-YYYY	Name of Patentee or Applicant of Oited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	76
128-	<u> </u>	EP-0 881 673-A2	12-02-1998	Intt. Business Machines Group		
		JP-63118093	05/1988	Tanaka Electron Ind Co Ltd		
		JP-04131395	05/1992	Toshiba Corp		
	1	JP-04280993	10/1992	Electroplating Eng of Japan		
		JP-58182823	10/1983	Nippon Denki KK		
		JP-6017291	01/1994	Nec Corp		
WL		WO-97/12079	04/1997	Crafts et al.		

[&]quot;EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw fine through citation if not in conformance and not considered, include copy of this form with next communication to applicant. "Applicant's unique citation designation number (optional)." See Kinds Codes of USPTO Patent Documents at <a href="https://www.usnto.oog.com/www.usnto.oog.c

		<u> </u>		********	***************************************
Examiner	, 1	/	Date		Jar
Signature	W	LANGER	Considered	À	1105